CLAIMS

What is claimed is:

1. A digital delay line for use in a 3D audio sound system, comprising:

a first delay module providing a choice of any delay within a first resolution; and

a second delay module in series with said first delay module, said second delay module providing a choice of any of a plurality of additional fractional delays, each of said additional fractional delays being less than said first resolution.

2. The digital delay line for use in a 3D audio sound system according to claim 1, wherein said first delay module comprises:

a first-in, first out buffer.

3. The digital delay line for use in a 3D audio sound system according to claim 1, wherein said second delay module comprises:

a choice of any one of a plurality of polyphase filters, each of said polyphase filters providing an additional fraction delay less than said first resolution.

4. The digital delay line for use in a 3D audio sound system according to claim 1, further comprising:

a localization control module comprising an interaural time delay look-up table associating desired sound source locations with a particular interaural time delay.

5. The digital delay line for use in a 3D audio sound system according to claim 4, wherein said localization control module further comprises:

an integer and fractional delay selector adapted to determine a first time delay for use by said first delay module and said additional fractional delay for use by said second delay module.

6. The digital delay line for use in a 3D audio sound system according to claim 1, wherein:

said first resolution is based on a sampling rate of a digital audio signal.

7. A method for providing an interaural time delay in a digital 3D sound system, comprising:

selecting one of a plurality of available first time delays having a first resolution between each of said plurality of available first time delays;

additionally selecting one of a plurality of available second time delays, each of said plurality of available second time delays being less than said first resolution; and

adding said selected first time delay and said second time delay to provide a desired interaural time delay.

8. The method for providing an interaural time delay in a digital 3D sound system according to claim 7, wherein:

said desired interaural time delay relates to a desired interaural time delay for one ear of a listener; and

said first time delay relates to a desired interaural time delay for a second ear of said listener.

9. The method for providing an interaural time delay in a digital 3D sound system according to claim 7, wherein:

said plurality of available time delays are based on a sampling rate of a digital audio signal.

10. The method for providing an interaural time delay in a digital 3D sound system according to claim 7, further comprising:

fixing a first interaural time delay with respect to a first ear of a listener; and

providing said desired interaural time delay with respect to a second ear of said listener.

11. Apparatus for providing an interaural time delay in a digital 3D sound system, comprising:

means for selecting one of a plurality of available first time delays having a first resolution between each of said plurality of available first time delays;

means for additionally selecting one of a plurality of available second time delays, each of said plurality of available second time delays being less than said first resolution; and

means for adding said selected first time delay and said second time delay to provide a desired interaural time delay.

12. The apparatus for providing an interaural time delay in a digital 3D sound system according to claim 11, wherein:

said desired interaural time delay relates to a desired interaural time delay for one ear of a listener; and

said first time delay relates to a desired interaural time delay for a second ear of said listener.

13. The apparatus for providing an interaural time delay in a digital 3D sound system according to claim 11, wherein:

said plurality of available time delays are based on a sampling rate of a digital audio signal.

14. The apparatus for providing an interaural time delay in a digital 3D sound system according to claim 11, further comprising:

means for fixing a first interaural time delay with respect to a first ear of a listener; and

means for providing said desired interaural time delay with respect to a second ear of said listener.